**Solving One-Step Equations**

The goal of solving any equation is to find out what number the variable represents. This means that we have to get the variable by itself on one side of the equation. This is also called isolating the variable.

How do we do this? Let’s look at an example: x – 17 = 4

**Step 1:** Look at the original equation. Right now, we only need to worry about the side of the equation that has the variable. Identify what we need to get rid of or cancel out so that we can isolate the variable (nothing remains on that side of the equation with it).

In our example, we only need to look at the x – 17 because that’s the side of the equation that contains the variable. In order to get the x by itself, we need to cancel out the 17.

**Step 2:** Determine what operation is being done with the number that we want to cancel out.

In our example, we want to cancel out the 17. The operation that is being done with the 17 is subtraction.

**Step 3:** In order to cancel out something in an equation, we need to use inverse operations or the opposite operation of what is already being done in the problem.

In our example, since we are subtracting 17, to cancel it out we need to add 17. Here’s where the other side of the equation comes back into play. Whatever we do to one side of the equation, we have to do to the other (on the other side of the equals sign).

Here’s what we get: 

+17 +17 🡪 add 17 on both sides of the equation

x = 21 🡪 the 17s on the left side of the equation cancel out and we’re left with just x. On the right hand side of the equation, we add 4 and 17 to get 21.

**Inverse Operations** = Operations that are opposites of each other.

Examples of Inverse Operations:

* Addition and Subtraction
* Multiplication and Division
* Square and Square Root

Let’s look at some more examples and follow the 3 steps above to help us solve the equations:



**Step 1:** We only need to look at -3t. The thing that we need to cancel out is -3 because it is on the same side of the equation as the variable.

**Step 2:** In this problem, we are multiplying -3 and t

**Step 3:** In order to undo the multiplication, we have to divide. Therefore, we will divide both sides of the equation by -3. We get:

21 = -3t

-3 -3

-7 = t



**Step 1:** We only need to look at . The thing that we need to cancel out is the 6.

**Step 2:** The operation that we are doing with 6 is division. I know this because the fraction bar means divide.

**Step 3:** The inverse operation of division is multiply, so we have to multiply both sides of the equation by 6. We get:

